

What is claimed is:

1. A mobile communication system, comprising:

an mobile station;

5 at least one base station including an visiting area base station which controls an area in which said base station visits; and

an tracking channel being used by both said mobile station and said at least one base station for tracking each other using a narrow beam,

10 wherein a transmitting side of said base station has a control means for controlling a direction of a transmitting beam, and a receiving side of said mobile station has a control means for varying a receiving direction.

2. The mobile communication system according to claim 1, further comprising a switching means, which said mobile station and said visiting area base station switch said tracking channel to an information channel using the same frequency and beam used in said tracking channel after completion of a mutual tracking between said mobile station and said visiting area station.

20 3. The mobile communication system according to claim 1, further comprising:

a searching slot for searching an adjacent base station adjacent to said visiting area base station, said searching slot is provided in an information channel being used in communication between said mobile station and said visiting area station;

25 a means for searching the adjacent base station by said mobile station using said searching slot in the information channel; and

a means for transmitting a narrow beam by the adjacent base station.

4. A mobile communication system, comprising:

30 an mobile station;

an visiting area base station controlling an area in which said base station visits;

an adjacent base station being adjacent to said visiting area base station; and

a base station control unit controlling said visiting area base station and said adjacent base station,

5       wherein said mobile station receives a tracking channel by a searching slot during said visiting area base station and said mobile station are communicating each other using an information channel, where the tracking channel includes a base station identifier transmitted from said adjacent base station, said mobile station transmits a mobile station identifier and a control information including a location information and the base station identifier of said adjacent base station obtained from the tracking channel to said visiting area base station, and said visiting area base station transmits the control information to said adjacent base station via said base station control unit.

10      15       5.     The mobile communication system according to claim 1, wherein said visiting area base station includes a timer, and invokes said timer as a trigger when said visiting area base station receives a location information form said mobile station and releases said tracking channel compulsively after said timer expires and searches other base station using the released tracking channel.

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6. A mobile station comprising:

a controller for varying the direction of reception for receiving a narrow forward tracking beam in a tracking channel at a certain frequency, the narrow forward tracking beam being transmitted from at least one base station covering an area into which the mobile station enters, for transmitting a narrow reverse tracking beam in the tracking channel and for varying the direction of the reverse tracking beam,

10 wherein upon completion of a tracking process in which the mobile station and the at least one base station track each other's position relative to each other using the narrow tracking beams, the mobile station and the at least one base station switch to an information channel using the same frequency and direction as the tracking channel.

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7. The mobile station according to claim 6, wherein the mobile station is adapted to track an adjacent base station covering an area adjacent to the area covered by the at least one base station by receiving the narrow forward tracking beam of the adjacent base station during communication with the at least one base station.

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8. The mobile station according to claim 7, wherein a searching slot is provided in the information channel used by the at least one base station and the mobile station, and wherein the mobile station searches for the adjacent base station using the searching slot during communication with the at least one base station.